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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,410	10/15/2001	Lyndon W. Graham	SEM4492P0102US	4366

7590 04/16/2003

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EXAMINER
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VALENTINE, DONALD R

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 04/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant(s)

09/977,410

Applicant(s)

GRAHAM ET AL.

Examiner

Donald R. Valentine

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 35-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishida in view of Lytle.

Ishida teach the invention except for a pump means, means for applying current to the pump during electroplating. (See col. 2, lines 29-45; and col. 3, lines 36-40 and lines 54-55).

These passages of the reference suggest that pressure is exerted on the plating fluid suggesting

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the presence of a pump and that the diameter of the counter electrode is smaller than the diameter of the wafer holder (applicant's recited feature). Ishida describes a "cup shaped plating bath" which is being construed by the examiner to be a "reservoir".

Lytle shows apparatus, which, like Ishida, processes a horizontally arranged workpiece. Lytle further demonstrates means for applying current to the "counter electrode and the workpiece holder". Lytle also shows a pump which pumps electrolyte from a reservoir towards the workpiece. See col. 2, lines 20-36.

It would be considered within the skill of the art to provide means for applying current to the electrode terminals of Ishida and to provide a pump with current to cause the pump to function causing pressurized plating fluid flow toward the workpiece in Ishida. because such an adaptation would be necessary to facilitate the initiation of both electroplating on the workpiece and the forceful projection of an electrolyte against the workpiece.

5. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pearson.

Pearson teaches apparatus which includes a means for holding a workpiece above a "reservoir" (indicated as a trough 17) and includes a pump system and a power source to electrodes (counter electrodes) and the workpiece. See Figure 1. The reference describes a sparger, which has holes in it at a position between the workpiece and a counter electrode(s) (items 48 and 49). The presence of the sparger apparently is intended to insure uniform flow of electrolyte for plating on the workpiece undersurface. (See (See col. 2, lines 42-59; col. 3, lines 55-68; and col. 4, lines 1-11. The sparger has many plate(s) with holes and is not a "disk", however, in the absence of any unexpected results, the shape of the plate(s) would be modifiable

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by the skilled artisan as a matter of design choice. The sparger is being construed as being a “distributor” because it appears to function in the manner as is claimed by applicants.

It would be considered within the skill of the art to provide “distributor means” having holes for arranged to provide uniform electrolyte flow because the reference provides a structure which performs a function apparently as is desired by applicants in apparatus which have elements in combination similar to those of applicants’.

### *Claim Rejections - 35 USC § 112*

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 35 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for diffusion plate, does not reasonably provide enablement for a non-conducting porous separator. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The specification recites a diffusion plate but does not provide support for a “non-conducting” porous separator, see page 21, line 23 through page 22, line 2.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aigo and Mathieu show plating on horizontally arranged substrates.

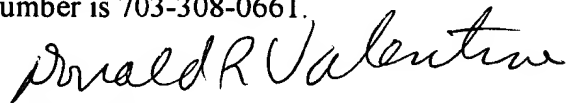
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald R. Valentine whose telephone number is 703-308-3327.

The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Donald R. Valentine  
Primary Examiner  
Art Unit 1742

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April 12, 2003